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4 (Fig. 1, *d, e*). In two further cases, this type of lateral marking was continued in the form of less distinct marginal blotches on valve 3. The marginal blotches on valve 4 may accompany an otherwise "normal" pigment pattern (10 examples in 219 examined; Fig. 1, *d*), or may be present where there is evidence of a tendency for the formation of a distinct axial stripe (five examples; Fig. 1, *e*).

It is evident, then, that in Chitons color pattern variations may occur in such a way as to affect single valves only (and, in *Chatopleura*, specifically valve 2 or 4); and either quite independently of this type of variation or accompanying it, may also affect all valves in the series simultaneously. Such variations are quite independent of age.

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#### FUGITIVE NET-VEINING IN THE CICADA (HEMIPTERA)

TILLYARD has lately noted<sup>1</sup> that, besides the chitinized veins which serve for the support of the insect wing, there exist in some cases at least fugitive blood-veins during the expansion of the wing, which later collapse and more or less completely disappear when the wing dries. In the Lepidoptera 1st A and the base of M are veins of the same character, and possess tracheæ like other longitudinal veins in that order. In every particular except the absence of chitinization these appear to be true veins, and in forms where the veins are provided with special series of setæ, as in *Acræa*, they are often similarly supplied.

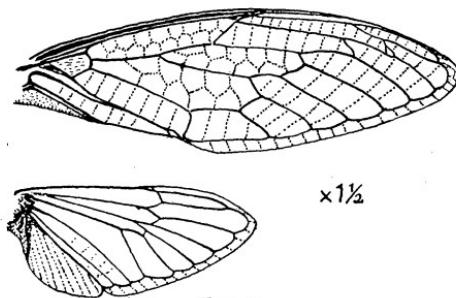


FIG. 1.

In watching a cicada expand, recently, I saw appear, as the

<sup>1</sup> *Proc. Linn. Soc., New S. Wales*, 44, 621; 1919.

expansion approached completion, a regular system of blood-veins in the spaces between the permanent veins. These show plainly only in the few minutes when the wing has become partially transparent, but in the adult wing they produce a characteristic waviness of the membrane, and a few of them may be seen in a favorable light as faint white lines. The arrangement is perfectly definite: the narrow cells are filled by a series of simple, evenly spaced, cross-veins, while in cells R, 1st M<sub>2</sub> and M they form a double series of cells alternating with each other. On the narrow margin beyond the ambient vein they are evenly spaced, the regular longitudinal veins each ending opposite the middle of a marginal cell. Toward the costa there are two veins opposite each definitive cell, while opposite cells M<sub>3</sub> and M<sub>4</sub> there are three, and opposite cell Cu<sub>1</sub> there appear to be four. The margin of the hind wing is similar, but the disc of the wing was not observed. In the large triangular anal cell (3d A<sub>1</sub>), instead of cross-veins there is a series of closely spaced parallel longitudinal veins, which remain visible in the dried wing.

It seems possible that these structures are the relic of a net-veining such as occurs in the Neuroptera. The different arrangement in the anal region is especially suggestive, as it would correspond to the plaited portion of the wing in the Orthoptera, where there exist numerous parallel longitudinal veins.

The figure is drawn from memory so far as the fugitive veins are concerned, checked up by the few that could be traced in the dry wing; it can be trusted only approximately.

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